Claims

[c1] 1. A shift control device for a bicycle transmission comprising:
a mounting member adapted to mount the shift control device to a bicycle;
a first lever operatively coupled to the mounting member such that the first lever stops at a plurality of positions corresponding to gear positions of the bicycle transmission, wherein the first lever moves in a first plane;
a second lever operatively coupled to the mounting member for movement in a second plane between a rest position and an operating position such that the second lever returns to the rest position after moving to the operating position;
wherein the first plane is substantially parallel to the second plane;
a positioning unit that rotates to a plurality of positions corresponding to gear positions of the bicycle; and
a positioning member that moves relative to the second lever and that is controlled by the second lever to operate the positioning unit.

[c2] 2. The device according to claim 1 wherein the first lever rotates within the first plane.

[c3] 3. The device according to claim 1 wherein the second lever rotates within the second plane.

[c4] 4. The device according to claim 1 wherein the positioning unit moves to the plurality of positions corresponding to gear positions of the bicycle in response to movement of the first lever and the second lever.

[c5] 5. The device according to claim 4 wherein the positioning unit moves in a first positioning unit direction in response to movement of the first lever,

and wherein the positioning unit moves in a second positioning unit direction opposite the first positioning unit direction in response to movement of the second lever.

[c6] 6. The device according to claim 5 wherein the first lever moves in a first lever direction to move the positioning unit in the first positioning unit direction, wherein the second lever moves in a second lever direction to move the positioning unit in the second positioning unit direction, wherein the first lever direction is the same as the second lever direction.

[c7] 7. The device according to claim 5 wherein the first lever rotates in a first lever direction to move the positioning unit in the first positioning unit direction, and wherein the second lever rotates in a second lever direction to move the positioning unit in the second positioning unit direction.

[c8] 8. The device according to claim 7 wherein the first lever direction is the same as the second lever direction.

[c9] 9. The device according to claim 5 wherein the positioning member maintains the positioning unit in each of the plurality of positions corresponding to gear positions of the bicycle.

[c10] 10. The device according to claim 9 wherein the positioning member allows the positioning unit to move in the second positioning unit direction in response to movement of the second lever.

[c11] 11. The device according to claim 10 further comprising a motion limiting member that limits movement of the positioning unit in response to movement of the second lever.

[c12] 12. The device according to claim 11 wherein the motion limiting member is retained to the second lever.

[c13] 13. The device according to claim 12 wherein the motion limiting member is one piece with the second lever.

[c14] 14. The device according to claim 1 wherein the first lever and the second lever are coupled to the mounting member such that the first lever and the second lever are located above the bicycle handlebar when the shift control device is mounted to the bicycle handlebar.

[c15] 15. A shift control device for a bicycle transmission comprising:
a mounting member adapted to mount the shift control device to a bicycle;
a first lever operatively coupled to the mounting member such that the first lever stops at a plurality of positions corresponding to gear positions of the bicycle transmission;
a second lever operatively coupled to the mounting member for movement between a rest position and an operating position such that the second lever returns to the rest position after moving to the operating position;
a positioning unit that rotates to a plurality of positions corresponding to gear positions of the bicycle; and
a motion limiting member retained to the second lever to limit motion of the positioning unit during operation of the second lever.

[c16] 16. The device according to claim 15 wherein the motion limiting member moves together with the second lever.

[c17] 17. The device according to claim 16 wherein the motion limiting member is one piece with the second lever.

[c18] 18. The device according to claim 15 wherein the positioning unit rotates in a first positioning unit direction in response to movement of the first

lever, and wherein the positioning unit rotates in a second positioning unit direction opposite the first positioning unit direction in response to movement of the second lever.

[c19] 19. The device according to claim 18 wherein the first lever moves in a first lever direction to rotate the positioning unit in the first positioning unit direction, wherein the second lever moves in a second lever direction to rotate the positioning unit in the second positioning unit direction, and wherein the first lever direction is the same as the second lever direction.

[c20] 20. The device according to claim 15 wherein the first lever rotates in a first lever direction to move the positioning unit in the first positioning unit direction, and wherein the second lever rotates in a second lever direction to move the positioning unit in the second positioning unit direction.

[c21] 21. The device according to claim 20 wherein the first lever direction is the same as the second lever direction.

[c22] 22. The device according to claim 15 further comprising a positioning member that maintains the positioning unit in each of the plurality of positions.

[c23] 23. The device according to claim 22 wherein the positioning member allows the positioning unit to move in the second positioning unit direction in response to movement of the second lever.

[c24] 24. The device according to claim 23 wherein the motion limiting member moves together with the second lever.

[c25] 25. The device according to claim 24 wherein the motion limiting member is one piece with the second lever.

[c26] 26. The device according to claim 15 wherein the first lever and the second lever are coupled to the mounting member such that the first lever and the second lever are located above the bicycle handlebar when the shift control device is mounted to the handlebar.

[c27] 27. The device according to claim 15 wherein the first lever moves in a first plane, wherein the second lever moves in a second plane, and wherein the first plane is substantially parallel to the second plane.

[c28] 28. A shift control device for a bicycle transmission comprising:
a mounting member adapted to mount the shift control device to a bicycle handlebar;
a first lever operatively coupled to the mounting member such that the first lever stops at a plurality of positions corresponding to gear positions of the bicycle transmission;
a second lever operatively coupled to the mounting member for movement between a rest position and an operating position such that the second lever returns to the rest position after moving to the operating position;
a positioning unit that rotates to a plurality of positions corresponding to gear positions of the bicycle transmission in response to movement of one of the first lever and the second lever; and
wherein the first lever and the second lever are coupled to the mounting member such that the first lever and the second lever are located above the bicycle handlebar when the shift control device is mounted to the handlebar.

[c29] 29. The device according to claim 28 wherein the first lever moves in a first plane, wherein the second lever moves in a second plane, and wherein the first plane is substantially parallel to the second plane.

[c30] 30. The device according to claim 28 wherein the positioning unit rotates to a plurality of positions corresponding to gear positions of the bicycle transmission in response to movement of the first lever and the second lever.

[c31] 31. The device according to claim 30 wherein the positioning unit rotates to the plurality of positions corresponding to gear positions of the bicycle transmission in response to rotation of the first lever and the second lever.

[c32] 32. The device according to claim 30 wherein the positioning unit moves in a first positioning unit direction in response to movement of the first lever, and wherein the positioning unit moves in a second positioning unit direction opposite the first positioning unit direction in response to movement of the second lever.

[c33] 33. The device according to claim 32 wherein the first lever moves in a first lever direction to move the positioning unit in the first positioning unit direction, wherein the second lever moves in a second lever direction to move the positioning unit in the second positioning unit direction, and wherein the first lever direction is the same as the second lever direction.

[c34] 34. The device according to claim 32 wherein the first lever rotates in a first lever direction to move the positioning unit in the first positioning unit direction, and wherein the second lever rotates in a second lever direction to move the positioning unit in the second positioning unit direction.

[c35] 35. The device according to claim 34 wherein the first lever direction is the same as the second lever direction.

[c36] 36. The device according to claim 32 further comprising a positioning

member that maintains the positioning unit in each of the plurality of positions corresponding to gear positions of the bicycle transmission.

[c37] 37. The device according to claim 36 wherein the positioning member allows the positioning unit to move in the second positioning unit direction in response to movement of the second lever.

[c38] 38. The device according to claim 37 further comprising a motion limiting member that limits movement of the positioning unit in response to movement of the second lever.

[c39] 39. The device according to claim 38 wherein the motion limiting member is retained to the second lever.

[c40] 40. The device according to claim 39 wherein the motion limiting member is one piece with the second lever.

[c41] 41. A bicycle control apparatus comprising:
a mounting member adapted to mount the bicycle control apparatus to a bicycle;
a positioning unit coupled to the mounting member for moving to a plurality of positions; and
a positioning member that maintains the positioning unit in each of the plurality of positions, wherein the positioning member comprises a material that deforms in response to excessive force applied between the positioning member and the positioning unit to release the positioning unit from a maintained position.

[c42] 42. The apparatus according to claim 41 further comprising a first lever operatively coupled to the positioning unit so that the positioning unit moves in response to movement of the first lever.

[c43] 43. The apparatus according to claim 42 wherein the first lever stops at a plurality of positions corresponding to gear positions of the bicycle transmission.

[c44] 44. The apparatus according to claim 42 further comprising a second lever operatively coupled to the positioning unit so that the positioning unit moves in response to movement of the second lever.

[c45] 45. The apparatus according to claim 44 wherein the positioning unit moves in a first positioning unit direction in response to movement of the first lever, and wherein the positioning unit moves in a second positioning unit direction opposite the first positioning unit direction in response to movement of the second lever.

[c46] 46. The apparatus according to claim 45 wherein the first lever moves in a first lever direction to move the positioning unit in the first positioning unit direction, wherein the second lever moves in a second lever direction to move the positioning unit in the second positioning unit direction, wherein the first lever direction is the same as the second lever direction.

[c47] 47. The apparatus according to claim 45 wherein the first lever rotates in a first lever direction to move the positioning unit in the first positioning unit direction, and wherein the second lever rotates in a second lever direction to move the positioning unit in the second positioning unit direction.

[c48] 48. The apparatus according to claim 47 wherein the first lever direction is the same as the second lever direction.

[c49] 49. The apparatus according to claim 45 wherein the positioning member allows the positioning unit to move in the second positioning unit direction

in response to movement of the second lever.

[c50] 50. The apparatus according to claim 49 further comprising a motion limiting member that limits movement of the positioning unit in response to movement of the second lever.

[c51] 51. The apparatus according to claim 50 wherein the motion limiting member is retained to the second lever.

[c52] 52. The apparatus according to claim 51 wherein the motion limiting member is one piece with the second lever.

[c53] 53. The apparatus according to claim 44 wherein the first lever and the second lever are coupled to the mounting member such that the first lever and the second lever are located above the bicycle handlebar when the shift control device is mounted to the handlebar.

[c54] 54. The apparatus according to claim 44 wherein the first lever moves in a first plane, wherein the second lever moves in a second plane, and wherein the first plane is substantially parallel to the second plane.

[c55] 55. A shift control device for a bicycle transmission comprising:
a mounting member adapted to mount the shift control device to a bicycle;
a positioning unit coupled to the mounting member for moving to a plurality of positions;
a first lever that moves in a first lever direction to move the positioning unit in a first gear position direction;
a second lever that moves in a second lever direction to move the positioning unit in a second gear position direction opposite the first gear position direction;

wherein the first lever direction is the same as the second lever direction;

a motion allowing member coupled to the mounting unit to allow movement of the positioning unit in the second gear position direction; and

a motion limiting member retained to the second lever and moving in the second direction to limit motion of the positioning unit in the second gear position direction during operation of the second lever.

[c56] 56. The device according to claim 55 wherein the first lever direction is one of a clockwise and a counterclockwise direction.

[c57] 57. The device according to claim 55 wherein the first lever and the second lever are coupled to the mounting member such that the first lever and the second lever are located above the bicycle handlebar when the shift control device is mounted to the handlebar.

[c58] 58. The device according to claim 55 wherein the first lever moves in a first plane, wherein the second lever moves in a second plane, and wherein the first plane is substantially parallel to the second plane.

[c59] 59. A shift control device for a bicycle transmission comprising:

a mounting member adapted to mount the shift control device to a bicycle handlebar;

a lever operatively coupled to the mounting member such that the lever stops at a plurality of positions corresponding to gear positions of the bicycle transmission;

a push button operatively coupled to the mounting member for movement between a rest position and an operating position such that the push button returns to the rest position after moving to the operating position;

a positioning unit that rotates to a plurality of positions corresponding to

gear positions of the bicycle transmission; and

wherein the lever and the push button are operatively coupled to the positioning unit such that the positioning unit moves in a first direction in response to operation of the first lever and moves in a second direction opposite the first direction in response to operation of the push button.

[c60] 60. The device according to claim 59 further comprising a positioning member that maintains the positioning unit in each of the plurality of positions corresponding to gear positions of the bicycle transmission.

[c61] 61. The device according to claim 60 wherein the positioning member allows the positioning unit to move in the second positioning unit direction in response to movement of the push button.

[c62] 62. The device according to claim 61 further comprising a motion limiting member that limits movement of the positioning unit in response to movement of the push button.

[c63] 63. The device according to claim 62 wherein the positioning member comprises a first pawl, and wherein the motion limiting member comprises a second pawl.

[c64] 64. The device according to claim 63 wherein the first pawl and the second pawl rotate around a common axis.

[c65] 65. The device according to claim 59 wherein the positioning unit rotates in response to movement of the lever and the push button.

[c66] 66. The device according to claim 59 wherein the push button moves in a substantially straight line from the rest position to the operating position.

[c67] 67. The device according to claim 59 wherein the push button is

operatively hinged to the mounting member.

[c68] 68. The device according to claim 59 further comprising a cover that surrounds the push button.

[c69] 69. The device according to claim 68 wherein the push button is pushed into the cover when moving from the rest position to the operating position.